Open Educational Resources for Agricultural Extension

It is critical for agricultural development that research findings, practical information and innovations are spread as widely and quickly as possible. New knowledge practices, such as open educational resources (OER), are creating pathways to spread information more rapidly and broadly than ever before. This technical note highlights three examples of current open knowledge practice in agriculture spanning training and research dissemination.

What is OER?

The term Open Educational Resources (OER) was coined at UNESCO's 2002 Forum on Open Courseware and designates "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Open licensing is built within the existing framework of intellectual property rights as defined by relevant international conventions and respects the authorship of the work" (UNESCO, 2012). One of reason that OER are important is that they enable effective strategies for enabling knowledge to be built upon by others, in ways that go beyond viewing documents on the web.

What is an open copyright license?

A standard suite of internationally-recognized copyright licenses enabling open publication is made available by the non-profit organization Creative Commons. There is no registration to use the Creative Commons licenses. Licensing a work is as simple as selecting which of the six licenses best meets your goals, and then marking your work in some way so that others know that you have chosen to release the work under the terms of that license (see www.creativecommons.org).

How is OER different from sharing knowledge on the web?

Enabling a work to be OER entails (1) marking it with your choice of open copyright license and (2) publishing the work in a way that reduces barriers to its use and re-use. Sharing a work on the web may make it available, but unless you legally state otherwise you automatically have all legal rights reserved. If you want people to be able to re-use, customize and re-distribute the work, you have to provide a license.

There is another term, "open access," which typically describes freely-available online materials, such as full-text journal articles. The difference between open access and OER is that OER usually carry a less restrictive copyright license enabling derivative works and re-distribution. With OER for example, you often are given the rights to edit the original version, translate, and redistribute the work on your web site, CD or print.

Open access, on the other hand, often only allows you the right to use the original material - such as viewing it on a web site. The difference between the two terms is in the degree of control they legally grant the user to build on the original work.

Using OER to Increase Dissemination of Research

In 2010, one of the first agriculture research centers to begin publishing its research as OER was the International Livestock Research Institute (ILRI) headquartered in Nairobi, Kenya. ILRI is a member of the consortium of CGIAR Centers. The institute's mission is to work at the crossroads of livestock and poverty, bringing high-quality science and capacity-building to bear on poverty reduction and sustainable development for poor livestock keepers and their communities. As part of its mission, ILRI aims to make its knowledge products and resources open and accessible as a public good for others to make use of them to the fullest extent possible. ILRI publishes articles, books, reports, chapters, brochures, flyers, press items, CDs and DVDs, web sites, posters, conference papers and presentations, images, audio files, videos and films, maps, software, datasets and databases. Resources are housed in an open repository (see http://mahider.ilri.org). Legacy publications are being shared on Google Books, allowing 100% download of the content (http://books.google.com/books?q=ilri). Posters, photos and presentations are shared on social media platforms where they can be viewed in full (www.flickr.com/photos/ilri, www.slideshare.net/ilri).

ILRI is enhancing the accessibility – and potential re-usability – of these products by giving their products an open 'creative commons' license (http://infoilri.wordpress.com/2010/12/13/ilri-adopts-creative-commons-license-for-its-research-outputs/).
Under this license, ILRI retains copyright over each output. It also explicitly encourages wide non-commercial re-use of each output, subject to full attribution of ILRI and the author(s), and use of an equally open license for any derivative outputs. This license has been applied to all ILRI publications since January 2011 and is also applied to its photos, video material, etc.

In addition to publishing open resources, ILRI is also trying to open up some of the processes by which they design and deliver research by documenting and sharing many of the 'intermediate' processes along the research cycle. A good example is the Nile Basin Development Challenge projects in Ethiopia (http://nilebdc.org). In such projects, they use blogs to report on meetings, share presentations, engage with stakeholders, and generally report on the activities of the project (even before the 'science' is ready to communicate – http://infoilri.wordpress.com/2012/02/10/sustaining-agri-water-research-communication-efforts-over-time).

Prepared by
Christine Geith, Executive Director, **Karen Vignare**, Director, MSU Global. Michigan State University
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Events and project activities are documented through photos, video and photofilm (http://blip.tv/ilri-photofilm). Wikis and video are also used to document workshops and events (http://nilebdc.wikispaces.com and http://infoilri.wordpress.com/social-reporting).

Together these approaches represent an effort to make ILRI research much more open in order to increase its impact. Products can be obtained 'in full' with a license that encourages re-use. Project activities can be followed and early choices and decisions are documented and visible. Researchers are trying different, more accessible communication tools to share their work. Since adopting open platforms, ILRI high-level web site metrics suggest that adopting more open approaches leads to a 30-fold increase in views within three years. There are other examples of more openness in agriculture research knowledge, such as the World Bank's announcement in 2012 that they are publishing some of their research and resources as OER (see http://creativecommons.org/weblog/entry/32335).

Table 1: Views of Selected ILRI Web Services, 2009-2011

	2009	2010	2011
Film & video	6,000	19,000	36,000
Presentations		92,000	205,000
Photos			365,000
Blogs	23,000	255,000	370,000
Repository		270,000	1,900,000
Google Books	115,000	1,190,000	1,270,000
Subtotal	144,000	1,826,000	4,146,000

Creating and Using University Agriculture OER

AgShare (www.oerafrica.org/agshare/AgShareHome/tabid/ 1290/Default.aspx) is a powerful tested model that provides strategies for a coherent institutional approach to agricultural teaching, research and community development. It is one of the first tertiary OER initiatives in agriculture in the world. The AgShare Pilot 2010-2012 funded by the Bill & Melinda Gates Foundation and led by Michigan State University (MSU) and OER Africa of the South African Institute for Distance Education (SAIDE) provided evidence that this model can be scaled and sustained (Geith, Butcher, Vignare, Yergler, 2010). With the addition of RUFORUM (Regional Universities Forum for Capacity Building in Agriculture) as a third partner, the next phase of AgShare in 2012-2015 will provide an extensive network to build upon the success of the pilot.

Using the AgShare Methods of OER creation and use, students create three outputs as part of their action-research community project: (1) publishable research such as a thesis or paper; (2) a teaching case (print or video) designed for use by faculty in a specific curriculum; (3) training or information materials for the community.

The teaching cases and the extension materials are peer reviewed and published as OER. AgShare methods have demonstrated impact on farmers, student researchers, faculty and students in the classroom.

For example, AgShare methods:

- transform the way in which academics conceptualize their role as teachers and researchers by validating community-based problems as research and collaborating with students and stakeholders;

- create relevant and effective student learning in the coursework component of the master's degree, enabling students to engage with local contexts and issues and not only abstract theory;

- increase students' capacity to conduct meaningful, high quality independent research which is widely shared under an open license and adds demonstrable research to the student's resume;

- contribute to the improvement of farmer practices that lead to improved quality and productivity, and position them to begin moving away from subsistence farming;

- produce free, openly-licensed educational resources and research products for customization and re-use that improve the quality of teaching through relevant case studies.

AgShare methods integrate the creation and publication of OER for teaching and extension into student research. It creates an ongoing stream of science-based peer-reviewed local teaching cases. AgShare methods result in an ongoing stream of science-based local extension materials such as posters, brochures and videos that are freely available for re-use localization and distribution. AgShare materials are at www.oerafrica.org/agshare/AgShareResources/tabid/1405/Default.aspx.

Localizing Training using OER

The award winning, Food Safety Knowledge Network (FSKN) http://foodsafetyknowledgenetwork.org is a collaborative platform that provides free access to high-quality, standar-dized learning resources and assessments using open source tools and openly-licensed materials requiring attribution and sharing.

As a result of an extensive partnerships and grants led by Michigan State University, training materials are now available in six different languages including full courses and learning resources. Material is currently aligned with the largest association of consumer goods retailers and manufacturers, Global Food Safety Initiatives (www.mygfsi.com), which harmonizes requirements for small company suppliers to trade locally and internationally (Geith, Vignare, Bourquin, Thiagarajan, 2010).

FSKN was launched with funding from the Hewlett Foundation, USAID, World Bank, World Trade Organization and UNIDO as well as private companies. Its open resources have been translated into multiple languages and customized with culturally-appropriate examples. FSKN has been used so far to provide training in India, China, Vietnam, Thailand, Japan, Latin America, Russia, Ukraine, Egypt and the United States. FSKN resources include multiple competency frameworks, hundreds of open materials, learning lessons, online course, and assessments (Vignare, Geith, Collins, Weebadde, 2011). Materials to use and customize for training are at http://fskntraining.org.

Open Educational Resources for Agricultural Education and Extension

Finding Agriculture OER

While there are many sources for freely available agriculture knowledge on the web, relatively few are as yet openly licensed as OER. Several large international organizations such as USAID, World Bank, Commonwealth of Learning, and The United Nations Food and Agriculture Organization's Knowledge Forum have collected thousands of digital resources which are generally available for open access – which means you can use the resources freely, but you don't usually have the legal right to make derivative works or to redistribute the work without first asking permission. Moreover, digitally available agriculture resources have been stored in local servers, preventing sharing of these important resources. Efforts to create large digital collections continue to rely on individuals to weed through the repositories and find applicable resources. For extension professionals, the task is often daunting but improvements are forthcoming.

A "how-to" guide published as part of the AgShare project describes some of the currently available resources www.oer africa.org/ResourceDownload.aspx?assetid=2328&userid=1 and how to search for them. Several organizations are collaborating to agree to metadata standards and federation. For example, the Coherence in Information for Agricultural Research for Development (CIARD) initiative is underway to open up and standardize resource collections see www.ciard.net.

A leader in the field is Virtual Open Access Agriculture & Aquaculture Repository (VOA3R), www.voa3r.eu (Protonotarios, Gavrilut, Athanasiadis, Hatzakis & Sicilia, 2011). The VOA3R project is testing a technical solution for the harmonization of these differences and the usage of a common metadata. This technical improvement will lead to methods where large agriculture repositories can talk to each other so that a user can go to one repository and still find all the resources from others during their search. Within two years, VOA3R plans to test the process with external partners. These external partners will include very small local holders of materials. These are the same places which often lack any ICT skills to appropriately catalogue materials. While much of this effort will benefit the average agriculture user, it will also begin to allow more open sharing of resources throughout extension offices, universities and NGOs which have collected digital resources in the last decade.

Publishing OER

The MEAS project has prepared an overview of the OER process. It consists of developing, publishing and distributing content in ways that enable sharing knowledge that is free of technical and legal barriers. See the slides at http://www.meas-extension.org/oer.

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MEAS | **College of ACES** | **213 Mumford Hall** | **Urbana, IL, 61801, USA** | **www.meas-extension.org**

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